

Patent claims:

1. A method of making a conduit (1) for vibration-stressed piping systems, in particular as a motor-vehicle exhaust pipe, from a preshaped strip (2 or 3), in particular a metal strip, that is helically wound with bellows-like turns (4 or 22), the wound-together layers formed by a strip width having singly hooked-together or multilayer interlocked edges (9; 19) joined by interfitting, welding, or a similar joining process, characterized in that the strip (2 or 3) is preshaped into an arcuate shape with webs heights (h1 and h2) of the bellows-shaped folds (4 or 22) that are a multiple of a strip thickness.

2. The method according to claim 1 characterized in that the webs (5a and 5b) of the bellows folds (4 and 22) have a height equal to 25 to 75 times the thickness of the strip (2 or 3).

3. The method according to claim 1 or 2 characterized in that the webs (5a and 5b) are shaped to project radially outward .

4. The method according to claim 1 or 2 characterized in that the webs (5a and 5b) are shaped to project radially inward.

5. The method according to one of claim 1 to 4, characterized in that one strip edge (17 or 18) and/or one strip section of one turn layer covers a valley of an adjacent bellows-like fold (4).

5 6. The method according to one of claims 1 to 4, characterized in that at least two geometrically different strips (2 and 3) are wound together, one strip (3) forming a gas-conducting tube and the other strip (2) forming bellows folds (4).

10 7. The method according to claim 6, characterized in that the strips (2 and 3) are initially continuously roller shaped, then are deformed and pressure wound, and then the roller-shaped and wound strips are joined together.

15 8. The method according to claim 6, characterized in that the strips (2 and 3) are sequentially and discontinuously roller shaped, then wound together under pressure, and subsequently the roller-shaped and wound strips are joined together.

20 9. The method according to claim 7 or 8, characterized in that

the edges of the strips (2 and 3) to be joined are deformed to simplify the separation and further treatment and for locally homogenizing the product diameter.

10. The method according to one of claims 1 to 4 and 6
5 to 9, characterized in that
the bellows folds (4 and 22) are made by connecting webs (5a and 5b) projecting from the edges of the trailing edge (10) of one turn and the leading edge (11) of another turn.

11. The method according to claim 10,
10 characterized in that
the web edges are deformed and joined together at peaks (15).

12. The method according to claim 10,
characterized in that
the web edges are thermally joined together at peaks (15).

13. The method according to one of claims 6 to 12,
characterized in that
a bell-shaped inner bellows fold (22) is wound in a valley of an
outer bellows fold (4) with diametrically extending webs (5b)
20 projecting from a common bridge and connecting web (21).

14. The method according to claim 13,
characterized in that

upper free web edges of the bell-shaped inner bellows fold (22) are connected to adjacent web edges of the outer bellows fold (4).

15. The method according to one of claim 1 to 14, characterized in that

5 in order to separate the conduit (1) into standard lengths and/or to shape and join them support means are used.

16. The method according to one of claims 1 to 15, characterized in that
the finished conduit (1) is conditioned for the required static and
10 dynamic stiffness.

17. A conduit (1) for vibration-stressed piping systems, in particular as a motor-vehicle exhaust pipe, made from a preshaped strip (2 or 3), in particular a metal strip, that is helically wound with bellows-like turns (4 or 22), the wound-
15 together layers formed by a strip width having singly hooked-together or multilayer interlocked edges (9; 19) joined by interfitting, welding, or a similar joining process, in particular for carrying out the method according to one of claims 1 to 16 characterized in that
20 it is formed with bellows folds (4 and 22) having heights (h1 and h2) equal to a multiple of a strip thickness.

18. The conduit according to claim 17,

characterized in that
the web heights (h_1 and h_2) are 25 to 75 times the thickness of the
strip.

19. The conduit according to claim 17 or 18,
5 characterized in that
at least two geometrically different strips (2 and 3) are wound
together, one strip (3) forming a gas-conducting tube and the other
strip (2) forming the bellows folds (4 and 22).

20. The conduit according to one of claims 17 to 19,
10 characterized in that
each bellows fold (4) has a peak (15) formed from the start as a
closed turn.

21. The conduit according to one of claims 17 to 19,
characterized in that
15 each bellows fold (4) is formed by webs (5a and 5b) projecting
radially from the turns and having free edges that are connected
gas-tight together at the peak (15).

22. The conduit according to one of claims 17 to 21,
characterized in that
20 the hooked-together interlock connections (9 and 19) are axially
slidable in each other.

23. The conduit according to one of claims 17 or 18 and
21 or 22,
characterized in that
the valleys (16) of the bellows folds (4 or 22) are covered by
strip regions (20 or 21).

24. The conduit according to one of claims 17 to 19,
characterized in that
a tube-base forming strip (3) is formed with bell-shaped bellows
folds (22) that are each fitted in a bellows fold of the other
strip (2), free web edges of the outer bellows fold (4) being
joined at the peak (15) with the free edges of the inner adjacent
webs (5b) of the bell-shaped fold (22) that covers the valley (16)
of the outer bellows fold (4) with a connecting region (21) between
its webs (5b).